CLAIMS

1. Electromechanical actuator, comprising:

a body;

a peristaltic actuating element, extended in a main motion direction;

the peristaltic actuating element in turn comprising:

interaction surface with the body;

volumes of electromechanical material;

electrodes for excitation of the volumes of electromechanical material; and

control means for supplying voltage signals to the electrodes;

the volumes of electromechanical material and the electrodes being arranged to cause the peristaltic actuating element to change a dimension difference between the peristaltic actuating element and the body;

the control means being arranged to supply voltage signals causing borders of a peristaltic section within which the dimension change is present to move substantially continuously along the peristaltic actuating element parallel to the main motion direction.

2. Electromechanical actuator according to claim 1, wherein the change of the dimension difference between the peristaltic actuating element and the body has a component in a dimension essentially parallel to the main motion direction.

3. Electromechanical actuator according to claim 1, wherein the change of the dimension difference between the peristaltic actuating element and the body has a component in a dimension essentially orthogonal to the main motion direction.

4. Electromechanical actuator according to claim 1, wherein the length of the peristaltic section is less than half an entire length of the peristaltic actuating element.

5. Electromechanical actuator according to claim 4, wherein the length of the peristaltic section is considerably less than half the entire length of the peristaltic actuating element.

6. Electromechanical actuator according to claim 2, wherein the change of dimension difference along the main motion direction is caused by a contraction of the peristaltic section.

7. Electromechanical actuator according to claim 2, wherein the change of dimension difference along the main motion direction is caused by an expansion of the peristaltic section.

8. Electromechanical actuator according to claim 2, wherein the volumes of electromechanical material and the electrodes being arranged to further cause the interaction surface within the peristaltic section to be removed from the body to be moved within the peristaltic section simultaneously as the change in dimension difference parallel to the main motion direction.

9. Electromechanical actuator according to claim 1, wherein the volumes themselves constitute the dominating part of the peristaltic actuating element.

10. Electromechanical actuator according to claim 1, wherein the peristaltic actuating element in turn comprises a continuous body of elastic material to which the at least one volume of electromechanical material is attached.

11. Electromechanical actuator according to claim 1, wherein a contraction of the peristaltic actuating element perpendicular to the main motion direction causes the interaction surface within the peristaltic section to be removed from the body.

12. Electromechanical actuator according to claim 1, wherein a bending of the peristaltic actuating element perpendicular to the main motion direction

causes the interaction surface within the peristaltic section to be removed from the body.

13. Electromechanical actuator according to claim 1, wherein the interaction surface is a continuous interaction surface along substantially the entire peristaltic actuating element in the main motion direction.

14. Electromechanical actuator according to claim 1, wherein the interaction surface is a sectioned interaction surface, whereby the interaction surface sections being dispersed along substantially the entire peristaltic actuating element in the main motion direction.

15. Electromechanical actuator according to claim 1, wherein the interaction surface comprises first geometrical structures and the body to be moved comprises second geometrical structures, whereby the first and second geometrical structures are shape complementary.

16. Method of driving a peristaltic actuator, comprising the steps of:

positioning a peristaltic actuating element against a body, the peristaltic element having electromechanical volumes arranged for locally changing a dimension difference between the peristaltic actuating element and the body when activated;

selectively activate the electromechanical volumes for moving a peristaltic section in which the dimension change is present substantially continuously along the peristaltic actuating element parallel to a first direction;

whereby the peristaltic actuating element remaining in non-sliding contact with the body by sections of the peristaltic element outside the peristaltic section.

17. Method according to claim 16, wherein the change of the dimension difference between the peristaltic actuating element and the body has a component in a dimension essentially parallel to the first direction.

18. Electromechanical actuator according to claim 16, wherein the change of the dimension difference between the peristaltic actuating element and the body has a component in a dimension essentially orthogonal to the first direction.

19. Method according to claim 17, wherein said change in dimension difference is caused by an expansion of the peristaltic actuating element.

20. Method according to claim 17, wherein said change in dimension difference is caused by a contraction of the peristaltic actuating element.

21. Method according to claim 16, further comprising the step of:

imposing a dimension change of the peristaltic actuating element within the peristaltic section in a second direction, different from the first direction, simultaneously as the step of causing the dimension difference change.

22. Method according to claim 21, wherein said dimension change in the second direction is a contraction.

23. Method according to claim 16 wherein the length of the peristaltic section is less than half an entire length of the peristaltic actuating element.

24. Method according to claim 23, wherein the length of the peristaltic section is considerably less than half the entire length of the peristaltic actuating element.

25. Peristaltic actuating element, extended in a first direction, comprising:

interaction surface with an interaction body;

at least one volume of electromechanical material;

electrodes for excitation of the at least one volume of electromechanical material; and

control means for supplying voltage signals to the electrodes;

the at least one volume of electromechanical material and the electrodes being arranged to cause a peristaltic section of the peristaltic actuating element to change a dimension difference between the peristaltic actuating element and the interaction body and to simultaneously cause the interaction surface within the peristaltic section to be removed from the interaction body;

the control means being arranged to supply voltage signals causing the at least one volume of electromechanical material to move borders of the peristaltic section substantially continuously along the peristaltic actuating element in the first direction.

26. Peristaltic actuating element according to claim 25, wherein the interaction body is another peristaltic actuating element.
